

Topic: Permutation and Combination

Pre-Content/content Post-Content	Learning Outcome/Objectives	
Pre-Content	General	Specific
Fundamental principle of counting content permutation when all objects are distinct ${}^n P_r$ factorial notations $n!$ ${}^n P_r = n!/(n-r)!$ Permutation of n different objects takes r at a time is nPr Permutation when all the objects are not distinct objects $n!/p_1!, p_2!, \dots, p_x!$ Combinations as selection of r objects out of n objects ${}^n C_r = \frac{n!}{(n-r)! r!}$ Post-content To work out extra practice questions	Students will be able to recognize some of counting techniques which will enable them answer various possible outcomes when arrangement is important. know and understand how to find No. of ways in which arrangements can be made (. permutations) compare and differentiate how to find No. of ways if only selection can be made. do practice questions	Students will be able to understand fundamental principle of counting and its application to daily life problems. execute and implement fundamental principle of counting establish factorial notation $n! = n(n-1)(n-2) \dots 2.1$ define permutations as no. of ways (possible outcomes if n objects are to be arranged as $n!$ Arranging r int of n as ${}^n p_r = n!/(n-r)!$ Permutation when all objects are not distinct objects p_1 are of one type, p_2 are of another & so on. $\frac{n!}{p_1! p_2! \dots p_k!}$ and its application relate Combination as number of possible ways in which selections can be made and its applications to real life problems? ${}^n C_r = \frac{n!}{(n-r)! r!}$ apply the knowledge of permutations and combinations in real life problems

Home Work /Assignment

- 1) NCERT Exercise questions (Questions from Ex .7.1 to 7.4 and misc. Ex from NCERT book)
- 2) Exemplar problem

Teacher's Activity	Students' Activity	Teacher's Observation and Remedial action taken
Teacher will Introduce the topic by taking example of suitcase lock and by taking example of 3 tops & 2 pants & no. of ways it can be worn. Give another example of no. of flags consisting 3 colors can be made from 5 given colors 9 as permutation) and by taking questions from NCERT Text book. Question from Ex-7.2, 7.3 will be discussed. explain the difference between permutations and combinations help students in identifying the type of problem help them to solve Questions from ex-7.4	Student will understand the concept and attempt various problems given in Ex-7.1 and,7.2 of NCERT book. listen attentively and solve some questions Ex-7.3 solve some questions 7.4 solve some questions from Misc. Exe. The difference between the permutation and combinations will be clarified. do some HOTS questions given as H.W.	Teacher will write observation and remarks after the class

Teaching Aids; Smart board, graph paper.

Methodology/Innovative Methods: lecture and interpretation.

Interdisciplinary Links: Used in Science and Engineering.